

REVISION OF ABRUS ADANSON (PAP.) WITH SPECIAL REFERENCE TO AFRICA

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Abrus is a small natural genus of the family *Papilionaceae*, containing four species, well distinguished by the presence of 9 connate stamens. As a genus it was first described by Adanson in 1763 who based it on *Glycine abrus* L.. In fruit this species is easily distinguished by its conspicuously red and black coloured seeds, which are used in various ways, e. g. as beads in rosaries and necklaces, for making poison and medicine.

The flowers of the species in *Abrus* do not show any character leading to specific segregation. Characters of the pod and inflorescence are more useful. One, imperfectly known, species is recorded only from Madagascar and another is confined to tropical Africa. The other two species have a circumtropical distribution, one of these, *A. fruticulosus*, is widely variable in habit, in the shape of the leaves, and in the indumentum. It is not advisable to segregate the different forms of this species, which were formerly described as distinct species (such as *A. schimperi*, *A. cantoniensis*, *A. mollis*, etc.), as infraspecific taxa, e. g. as varieties, or as name-bearing forms.

At the end of the present paper a list is given of representative specimens, for each species arranged in alphabetical order according to the collector's name.

I acknowledge my indebtedness to Prof. Dr. H. C. D. de Wit who helped me in various ways. I am also indebted to the Directors or Keepers of the following Herbaria for the loan of specimens, or for making specimens available for examination, or supplying information: Berlin (B), Brussel (BR), Coimbra (COI), Firenze (FI), Genève (G), Kew (K), Leiden (L), Lisboa (LISC), London (BM), München (M), Paris (P), Porto (PO), Pretoria (PRE), Utrecht (U), Wageningen (WAG), Wien (W), and Zürich (Z).

Abrus Adanson

Adanson, Fam. 2: 327. 1763; Linnaeus, Syst. 2: 472. 1767; Gen. Pl.: 365. 1778; DC., Prod. 2: 381. 1825; Wight & Walker-Arnott, Prod. 1: 236. 1834; Miquel, Fl. Ind. Bat. 1: 158. 1855; Bentham in Martius, Fl. Bras. 15(1): 215. 1859; Grisebach, Fl. Br. W. Ind. Isl.: 190. 1859; Harvey in Harvey & Sonder, Fl. Cap. 2: 262. 1862; Bentham, Fl. Austr. 2: 270. 1864; Bentham & Hooker, Gen. Pl. 1(2): 527. 1865; Baker in Oliver, Fl. Trop.

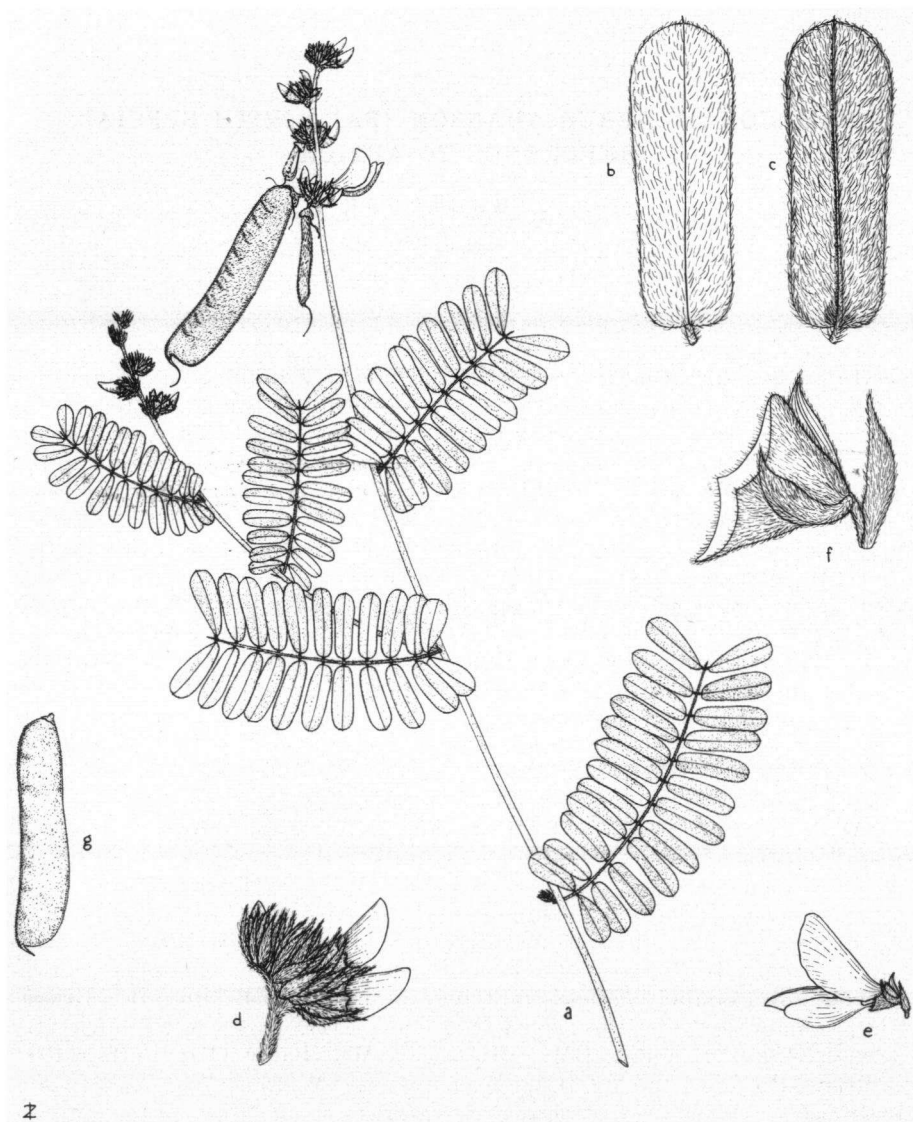


Fig. 1. *A. canescens* Welw. ex Bak.. a: flowering branch ($\times \frac{1}{2}$); b: upper surface of leaflet; c: lower surface of leaflet ($\times 2$); d: part of inflorescence ($\times 2$); e: flower ($\times 1$); f: calyx with bract and bracteoles ($\times 5$); g: pod ($\times \frac{1}{2}$) (a—f after Espirito Santo 3116; g after Michel 2822).

Afr. 2: 174. 1871; in Hooker, Fl. Br. Ind. 2: 175. 1876; Blanco, Fl. Fil. 2: 360. 1879; Boerlage, Handl. Fl. Ned. Ind. 1(2): 367. 1890; Taubert in E. & P., Pflanzenfam. 3(3): 355. 1894; Engler, Pflanzenw. Ost Afr. C: 219. 1895; Gagnepain in Lecomte, Fl. Gen. Indo-Chine 2: 357. 1916; Ridley, Fl. Mal. Pen. 1: 558. 1922; Baker f., Legum. Trop. Afr. 2: 350. 1929; Pellegrin, Legum. Gabon: 210. 1948; Phillips, Gen. S. Afr. Flow. Pl.: 421. 1951; Boutique in Fl. Congo Belge 6: 82. 1954.

Glycine L., Sp. Pl.: 753. 1753 (p.p. quoad *G. abrus* L.).

Hoepfneria Vatke, Oesterr. Bot. Zeitschr. 29: 222. 1879 (type species: *H. africana* Vatke (see under *A. fruticosus* Wall. ex W. & A.)).

Woody climbers, winding or not and then prostrate and assuming the habit of shrubs or undershrubs. Leaves paripinnate, multijugate; rhachis grooved, mucronate; leaflets opposite, mucronate; stipellae minute, subulate. Stipules mostly small, persistent.

Inflorescence terminating (apical and/or lateral) leafy or leafless branches, leafless branches bearing stipules, the leaves being either early shed or not developed. Flowers \pm sessile, aggregated on short, club-shaped or elongated, wart-like outgrowths (these outgrowths at the base very often supported by stipules of which the leaves are early shed or obsolete); bracts and bracteoles mostly small, often caducous. Calyx campanulate or funnel-shaped, lobed or short-toothed. Corolla much longer than the calyx; standard ovate-orbicular, notched at the apex, with a short claw; wings oblong-falcate, relatively long-clawed; keel longer than the wings. Stamens 9, monadelphous, the staminal tube at the base adnate to the standard; anthers uniform. Ovary \pm sessile, oblong, multiovulate, pubescent; style curved, \pm glabrous, mostly persistent; stigma penicillate.

Pods oblong or linear, bulgy or flattened, septate, beaked, pubescent. Seeds ovoid or laterally compressed, arillate.

Type species: *Abrus precatorius* L. (*Glycine abrus* L.).

Distribution: Four species, circumtropical.

Note: Adanson (l.c.) first published the name *Abrus* for a genus. He made no combination for the species intended as a base for the genus. The combination *Abrus precatorius* was made by Linnaeus in 1767 (l.c.).

Key to the species

- 1.a. Inflorescence mostly stout, rigid and strongly falcate. Pod bulgy, 2—3.5(5) cm long, 1—1.5 cm wide, mostly truncate at both ends. Seeds ovoid, scarlet with a black spot around the hilum 4. *A. precatorius*
- b. Inflorescence often slender, straight or slightly curved. Pod flat, or only slightly bulging over the seeds, outline less abruptly curved at both ends, mostly relatively narrower. Seeds laterally compressed, entirely brown-black 2
- 2.a. Bracts and bracteoles as long as or longer than the calyx 1. *A. canescens*
- b. Bracts and bracteoles up to half as long as the calyx 3
- 3.a. Leaflets 3—5 pairs, the upper ones lanceolate, 4.5—5.5 cm long, 1—1.5 cm wide 2. *A. diversifoliolatus*
- b. Leaflets (5)6—20 pairs, the upper ones usually smaller 3. *A. fruticosus*

1. *A. canescens* Welw. ex Baker — Fig. 1.

Baker in Oliver, Fl. Trop. Afr. 2: 175. 1871; Harms in Mildbraed, Wissensch. Ergebn. Deutsch. Zentr.-Afr.-Exp. 1907—1908 2: 263. 1911; Fl.

W. Trop. Afr. 1(2): 412. 1928; Baker f., Legum. Trop. Afr. 2: 351. 1929; Pellegrin, Legum. Gabon: 211. 1948; Robijns, Fl. Spermat. Parc Nat. Albert 1: 339. 1948; Tisserant, Cat. Fl. Oubangui-Chari: 91. 1950; Andrews, Flow. Pl. Sudan 2: 169. 1952; Boutique in Fl. Congo Belge 6: 83. 1954; Berhaut, Fl. Sénégal: 31. 1954; Fl. W. Trop. Afr. 1(2): 574. 1958.

Winding climber with woody pubescent branches, finally glabrescent. Stipules small, oblong-lanceolate. Leaves short-petiolate, 10—14-jugate; leaflets \pm rectangular, (6)10—20(30) mm long, 2—7(10) mm wide, white- or grey-pubescent on both sides, hairs often curved.

Inflorescences mostly terminal; flowers subsessile, usually in separated fascicles or pseudo-whorls; bracts and bracteoles as long as or longer than the calyx, (3)4—6 mm long, linear or lanceolate, acute. Corolla mostly purple, 10—15 mm long.

Pods broadly linear, nearly straight, (3.5)4—5.5(6) cm long, 8—12 mm wide, pubescent, 6—9-seeded, beak recurved, hook-shaped. Seeds ovate, 4—6 mm long, 3—4 mm broad, light brown-black, glossy.

Holotype: Angola, Pungo Andongo, Welwitsch 2250 (BM).

Distribution: Tropical Africa (no records seen from: Sénégal, Northern- and Southern Rhodesia, Nyasaland, Mozambique, Tanganyika, Sudan, Ethiopia, and Somalia).

Ecology: Climbing on trees, shrubs, or herbs in orchard- and shrub savannah, or twining over grass; often in marshy localities.

2. *A. diversifoliolatus* Breteler nom. nov. — Fig. 2: I.

A. acutifolius Viguier (non Blume ex Miquel), Not. Syst. 14: 173. 1952.

A climber with terete slender glabrescent branches. Leaves 3—5-jugate; petiole up to 2 cm long, pubescent; rachis 1.5—4 cm long, pubescent. The lower pair of leaflets ovate-elliptic, mostly 1—2 cm long, \pm 1 cm wide, obtuse or subcordate at the base, apiculate or acute at the apex; the upper pair of leaflets lanceolate, 4.5—5.5 cm long, \pm 1.5 cm wide, rounded and unequal-sided at the base, acute at the apex; all leaflets glabrous above, sparsely appressed-pubescent beneath.

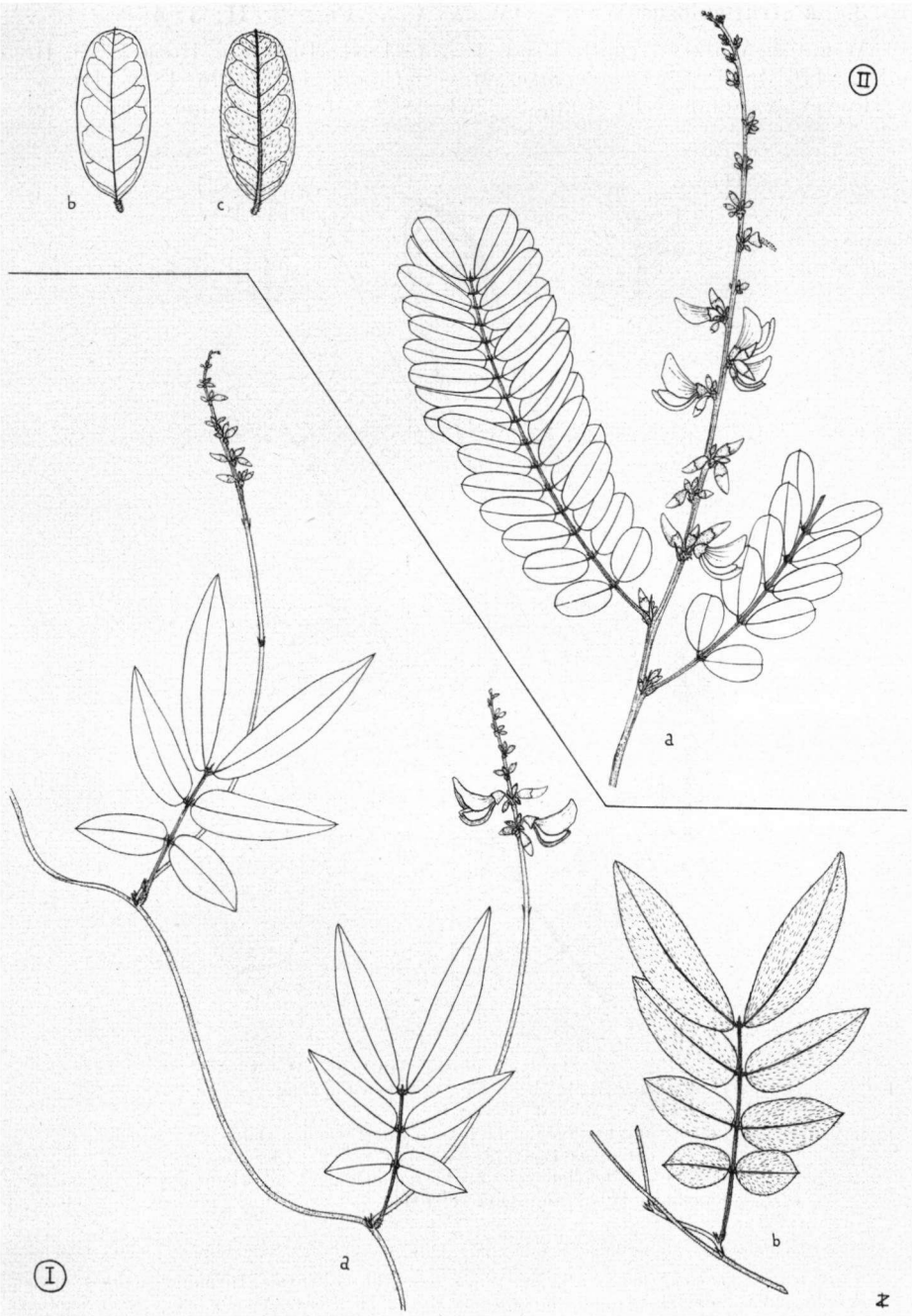
Inflorescence straight or nearly so; bracts and bracteoles minute. Calyx pubescent. Corolla 3—5 times as long as the calyx, pale purple.

Pods unknown.

Type: Madagascar, Maromandia, "lieux cultivés", Decary 1635 (P: holotype; L: isotype).

Note: The name *A. acutifolius* Viguier (1952) was preceded by *A. acutifolius* Blume ex Miquel (Fl. Ind. Bat. 1: 160. 1855), and had to be replaced by a new name.

Fig. 2: I. *A. diversifoliolatus* Bret., a: flowering branch ($\times \frac{1}{2}$); b: lower surface of leaf ($\times \frac{1}{2}$) (after Decary 1635: isotype (L)). II. *O. fruticosus* Wall. ex W. & A.. A form formerly described as *A. schimperii* Hochst. ex Bak., a: flowering branch ($\times \frac{1}{2}$); b: upper surface of leaflet ($\times 1$); c: lower surface of leaflet ($\times 1$) (after Schimper 1552).



3. *A. fruticosus* Wall. ex W. & A. — Figs. 2: II; 3; 4.

Wight & Walker-Arnott, Prod. 1: 236. 1834; Baker in Hooker, Fl. Br. Ind. 2: 176. 1876. — *A. laevigatus* Meyer, Comm. 1(1): 126. 1836; Harvey in Harvey & Sonder, Fl. Cap. 2: 263. 1862; Merrill, Enum. Phil. Flow.

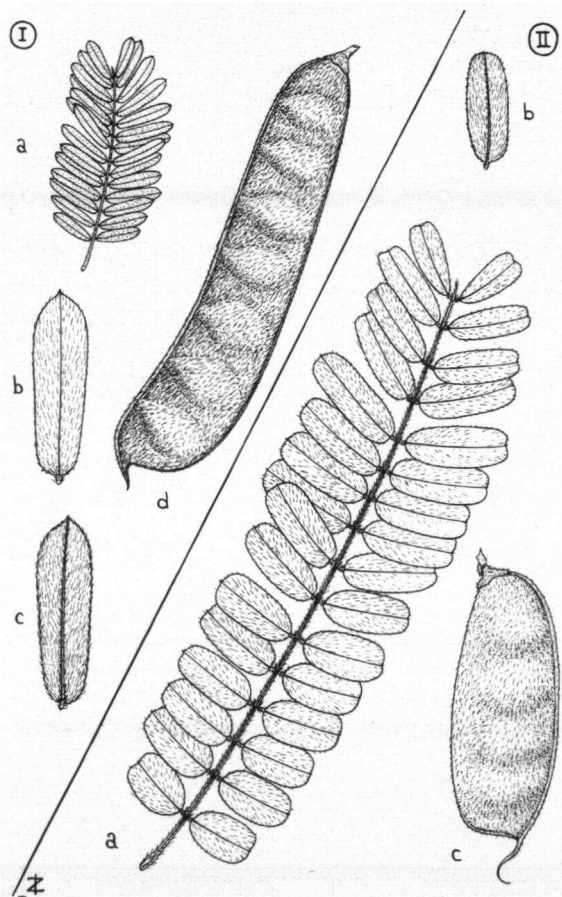
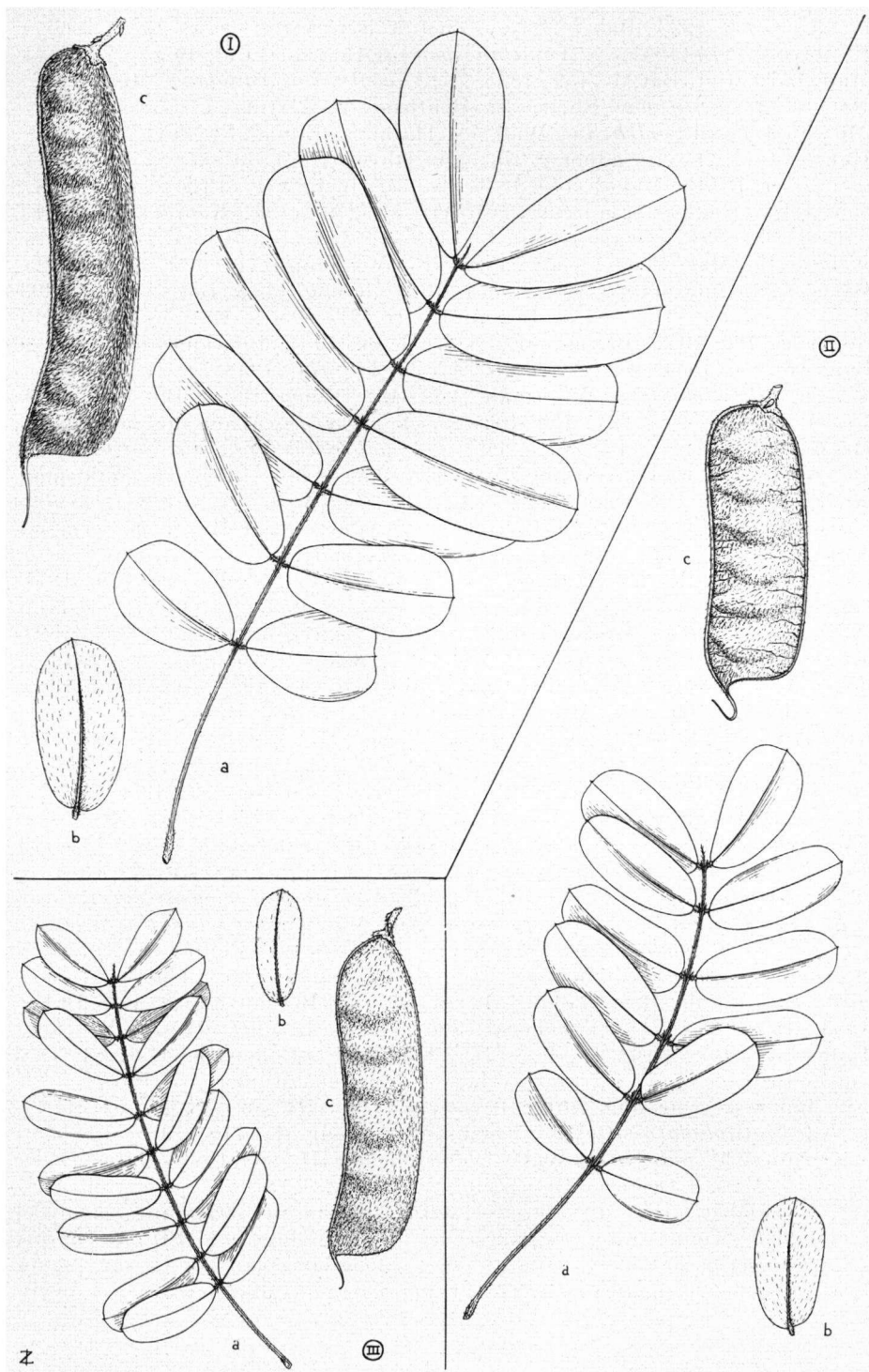


Fig. 3. *A. fruticosus* Wall. ex W. & A.. I. a: leaf ($\times 2$); b: upper surface of leaflet ($\times 6$); c: lower surface of leaflet ($\times 6$); d: pod ($\times 2$) (after Wight 827). II. A form formerly named *A. suffruticosus* Boutique. a: leaf ($\times 2$); b: lower surface of leaflet ($\times 2$); c: pod ($\times 2$) (after Fanshawe 1015 and Quarré 1044).

Fig. 4. *A. fruticosus* Wall. ex W. & A.. Three forms formerly named either *A. pulchellus* Wall. ex Thw. or *A. laevigatus* Meyer. a: leaf ($\times 1$); b: lower surface of leaflet ($\times 1$); c: pod ($\times 1$) (I after Espirito Santo 3647; II after Barbosa 180; III after Barbosa 1339).



Pl. 2(5): 303. 1923; Baker f., Rev. Zool. & Bot. Afr. 21: 303. 1932; Backer, Fl. Java 5: 114. 1941. — *A. melanospermus* Hasskarl, Cat. Bog.: 228. 1844; Miquel, Fl. Ind. Bat. 1: 159. 1855. — *A. acutifolius* Blume ex Miquel, l. c.: 160. — *A. tenuiflorus* Spruce ex Benth in Martius, Fl. Bras. 15 (1): 216. 1859. — *A. pulchellus* Wall. ex Thwaites, Enum. Pl. Zeyl.: 91. 1859; Harvey, l. c.: 263 (in adnot.); Baker in Oliver, Fl. Trop. Afr. 2: 175. 1871; in Hooker, Fl. Br. Ind. 2: 175. 1876; Taubert in E. & P., Pflanzenfam. 3(3): 355. 1894; Engler, Pflanzenw. Ost Afr. C: 219. 1895; Koorders, Exk. Fl. Java 2: 397. 1912; Gagnepain in Lecomte, Fl. Gen. Indo-Chine 2: 359. 1916; Ridley, Fl. Mal. Pen. 1: 558. 1922; Fl. W. Trop. Afr. 1(2): 412. 1928; Baker f., Legum. Trop. Afr. 2: 351. 1929; Rev. Zool. & Bot. Afr. 21: 303. 1932; Tisserant, Cat. Fl. Oubangui-Chari: 91. 1950; Andrews, Flow. Pl. Sudan 2: 169. 1952; Berhaut, Fl. Sénégal: 30. 1954; Boutique in Fl. Congo Belge 6: 84. 1954; Fl. W. Trop. Afr. 1(2): 574. 1958. — *A. pulchellus* Wall. f. *latifoliolata* De Wildeman, Ann. Mus. Congo Belge, Bot., sér. 5(1): 150. 1904; l. c., sér. 5(2): 153. 1907. — *A. pulchellus* Wall. var. *latifoliolata* De Wild., l. c., sér. 5(1): 267. 1906. — *A. pulchellus* Wall. var. *latifoliolatus* De Wild., Th. & H. Durand, Syll. Fl. Cong.: 146. 1909; De Wildeman, Et. Fl. Bang. & Ub.: 326. 1911. — *A. pulchellus* Wall. f. *typica* & f. *melanosperma* Backer, Fl. Java: 354. 1911. — *A. cantoniensis* Hance in Seemann, Journ. Bot. 6: 112. 1868; Gagnepain in Lecomte, Fl. Gen. Indo-Chine 2: 358. 1916. — *A. mollis* Hance in Seemann, Journ. Bot. 9: 130. 1871; Gagnepain, l. c.: 360. — *A. schimperi* Hochst. ex Baker in Oliver, Fl. Trop. Afr. 2: 175. 1871; Taubert in E. & P., Pflanzenfam. 3 (3): 355. 1894; Engler, Pflanzenw. Ost Afr. C: 219. 1895; Baker f., Legum. Trop. Afr. 2: 352. 1929; Tisserant, Cat. Fl. Oubangui-Chari: 92. 1950; Andrews, Flow. Pl. Sudan 2: 169. 1952; Cufodontis, Bull. Jard. Bot. Brux. 25(3), suppl.: 312. 1955. — *A. bottae* Deflers, Voy. Yemen: 132. 1889. — *A. somalensis* Taubert in E. & P., Pflanzenfam. 3(3): 355. 1894; in Engler, Bot. Jahrb. 23: 193. 1896. — *A. gracilis* Lima, Broteria, Ser. Bot. 19: 127. 1921. — *A. repens* Tisserant, Bull. Mus. Hist. Nat. Paris, sér. 2, 5: 332. 1933; Cat. Fl. Oubangui-Chari: 92. 1950. — *A. aureus* Viguier, Not. Syst. 14: 173. 1952. — *A. cyaneus* Viguier, l. c.: 172 (p.p.; see also under *A. precatorius*). — *A. grandiflorus* Viguier, l. c.: 172. — *A. madagascariensis* Viguier var. *typicus*, l. c.: 174. — *A. madagascariensis* Viguier var. *dunensis* Viguier, l. c. 174. — *A. madagascariensis* Viguier var. *littoralis* Viguier, l. c.: 175. — *A. madagascariensis* Viguier var. *parvifolius* Viguier, l. c.: 174. — *A. sambiranensis* Viguier, l. c.: 173. — *A. stictosperma* Berhaut, Mém. B. S. B. Fr., 1953—1954: 7. 1954; Fl. Sénégal: 30. 1954. — *A. suffruticosus* Boutique, Bull. Jard. Bot. Brux. 25(1): 127. 1955; in Fl. Congo Belge 6: 84. 1954 (nom. prov.). — *A. precatorius* L. var. *villosula* Miquel, Fl. Ind. Bat. 1: 159. 1855 (see note concerning *A. melanospermus* Hassk.). — *A. precatorius* L. var. *latifoliolatus* De Wildeman, Miss. Laur. 1: 118. 1905 (see note concerning *A. pulchellus* Wall. f. *latifoliolata* De Wild.). — *Hoepfneria africana* Vatke, Oesterr. Bot. Zeitschr. 29: 222. 1879.

A climber or a diffuse creeping fastigate or straggling shrub or undershrub; young branches pubescent, finally glabrescent. Stipules mostly small, sometimes up to 10 mm long, oblong-lanceolate or linear, acute. Leaves (5)6—20-jugate; leaflets varying in shape and pubescence, ovate,

obovate, or oblong, 3—45(50) mm long, 1—15(20) mm wide, base cordate, rounded, or cuneate, often unequal-sided, top acute, rounded, obtuse, or truncate-emarginate, upper surface pubescent, glabrescent, or glabrous, lower surface densely to sparsely, mostly appressed-pubescent.

Inflorescence terminal, lateral, or axillary; flowers crowded or in groups. Bracts and bracteoles up to half as long as the calyx. Corolla 3—6 times as long as the calyx, pale purple to yellowish.

Pod oblong to linear, 2—7(9) cm long, 0.8—1.5 cm wide, flattened, broadly rounded or cuneate at the base, rounded at the apex, pubescent or glabrescent, sometimes warty, 4—12-seeded. Seeds oval-suborbicular, laterally compressed, 3—7 mm long, 2—5 mm broad, brown-black, mostly glossy.

Type: Peninsula Ind. orientalis, Wight 827 (BR: lectotype; G: iso-lectotype).

Distribution: Circumtropical.

Ecology: A climber on the edge of forest or in regrowth bush. A low to medium shrub in dry sunny places: open woodland, grass-, and shrub savannah.

Notes: As was pointed out in the introduction *A. fruticulosus* is a highly variable species. This variability may be connected with its very different habitats: rain forest to savannah country, or even semi-desert.

The type specimens on which the synonyms are based show certain differences between each other, and differ also from the type of *A. fruticulosus*. These differences, however, are always restricted to size or shape, indumentum, or number of leaflets, shape or place of the inflorescence, size or shape of the pods, or the habit of the whole plant.

Single or together, all these characters vary and all conceivable intermediates can be found as soon as a wide range of specimens from a sufficiently large area is examined.

To judge from the description *A. laevigatus* Meyer is conspecific with *A. fruticulosus* Wall. ex W. & A..

It is uncertain, whether the sheet present in the Kew Herbarium with two mounted specimens, both indicated as "Type Specimen" of *A. laevigatus*, represents the type material. On this sheet nothing can be found about the details of the collecting locality as Meyer indicated in his *Commentariorum*. I traced the handwritings on this sheet, but only found that the labels "*Abrus laevigatus* E.M.a." and "*Abrus laevigatus* E.M.b." probably were written by the collector Drège. These two specimens and all specimens I saw from the area in which Drège collected the type specimens of *A. laevigatus* proved to be *A. fruticulosus* (or also *A. precatorius*).

I have not seen the type of *A. melanospermus* Hasskarl. To judge from Hasskarl's description, however, his plant is similar to a specimen collected in Java, presumably by Blume, and preserved in the Leiden Herbarium (Herb. Lugd. Bat. no. 908, 2—33). This is supported by the writings on the label: "*Abrus velutinus* Bl." in Blume's handwriting, and "*Abrus precatorius* var. *villosula* Miq. olim 1855" and "*Abrus melanospermus* Hassk. 1844", both in Miquel's handwriting. This specimen I designate as the type of *A. precatorius* L. var. *villosula* Miq..

Blume 831, collected in Java and now preserved in the Leiden Herbarium, was made the type of *A. acutifolius* Blume ex Miquel. This specimen is a form of *A. fruticosus* with acute leaflets. This highly variable character is insufficient for the segregation.

Spruce 786, the type of *A. tenuiflorus* Spruce ex Benthams of which duplicates are preserved at Kew and at Genève, shows no difference from *A. fruticosus*.

According to Thwaites's description of *A. pulchellus* Wall. ex Thw., this species is conspecific with *A. fruticosus*. Moreover Dr. de Wit examined the type, Thwaites 1467, collected in Ceylon and present in the Herbaria at Genève and at Paris. He agreed with me, that Thwaites 1467 belongs in *A. fruticosus*.

It is not clear what De Wildeman actually intended to publish, a distinct variety or a distinct form. He first published the "forma *latifoliolata*". Of this "forma" one of the specimens cited (Gillet 828 (BR)) belongs to a different genus (see Fl. Congo Belge 6: 85. 1954). Afterwards when De Wildeman referred to this "forma", he mostly cited it as a "var." and not as a "forma". The new combination "*A. precatorius* L. var. *latifoliolatus* De Wild.", published in 1905 (l. c.) is probably a lapsus calami.

A specimen present in the Leiden Herbarium (Herb. Lugd. Bat. no. 908. 2—40), collected in Java by Backer, is labeled by the collector: "*Abrus pulchellus* Wall. var. *melanosperma*" and dated "Juni 1904". This specimen I designate as the type of *A. pulchellus* Wall. f. *melanosperma* Backer, published in 1911 (l. c.).

Herb. H. F. Hance 13417, preserved in the Kew Herbarium and labeled "*Abrus cantoniensis*, Hance-Whampoa, Aug. 1869" is probably an isotype. The date and place of collecting, however, are not in accordance with the original publication and there is no indication about the actual collector.

Herb. H. F. Hance 15806, collected in China by Sampson & Hance f., type specimen of *A. mollis* Hance now preserved at Kew, is more hairy than other forms of *A. fruticosus*, but this difference is not constant.

The shrubby East-African forms of *A. fruticosus*, formerly named *A. schimperi* Hochst. ex Baker, based on Schimper 1552 collected in Ethiopia (see fig. 2: II) have mostly long, terminal inflorescences. The shrubby habit as well as the shape of the inflorescence are highly variable characters, and do not allow specific segregation.

I have not seen Botta 66 and 228, two plants collected in Yemen which became the type specimens of *A. bottae* Deflers. I was unable to trace these specimens. To judge from Deflers's description, however, Botta's specimens are conspecific with Schweinfurth (comm. Barbey) 1843, collected in Yemen and present in the Herbaria at Brussel and at Kew.

Hildebrandt 1391, collected in Somalia and made the type of *A. somalensis* Taubert, was probably lost at Berlin in 1943. Taubert's description in Bot. Jahrb. 23: 193. 1896, indicates nothing which might be considered to be a difference from *A. fruticosus*. Vatke who listed and described several plants of the collection of Hildebrandt, said about no. 1391 that it was not unlike Hildebrandt 2797, the type of *Hoepfneria africana* Vatke

(Oesterr. Bot. Zeitschr. 29: 223. 1879). East-African specimens of *A. fruticulosus* very often have a silky indumentum on the young shoots and in my opinion *A. somalensis* Taub. is conspecific with *A. fruticulosus* Wall. ex W. & A.

Lima 257, the type of *A. gracilis* Lima, collected in Mozambique and now preserved in the Porto Herbarium, on examination proved to be conspecific with *A. fruticulosus*.

A. repens described by Tisserant (l. c.) is, according to the diagnosis, conspecific with *A. fruticulosus*. Dr. de Wit who examined in the Paris Herbarium the type specimens, Tisserant 738 and 2946, agreed with my conclusion. Tisserant's specimens represent a savannah form of *A. fruticulosus*, having a small shrubby habit and small leaflets.

The following taxa, which Viguier described in the genus *Abrus*, being *A. aureus*, *A. cyaneus* partly, *A. grandiflorus*, *A. madagascariensis* var. *typicus*, — var. *littoralis*, — var. *dunensis*, — var. *parvifolius*, and *A. sambiranensis*, appeared, judging from the descriptions, conspecific with *A. fruticulosus*. Moreover, Dr. de Wit examined in the Paris Herbarium all specimens on which Viguier based these taxa and agreed with me, that they all represent only very slightly different forms of *A. fruticulosus*.

Berhaut 1433, collected in Sénégal and now preserved in the Paris Herbarium, became the type of *A. stictosperma* Berhaut. The pod of this specimen is, according to the description, smaller than is generally found in African specimens of *A. fruticulosus*. I found, however, that this character is of small importance, because all conceivable intermediates in size of pod occur.

I examined the holotype (de Giorgi s.n.: BR) and most of the paratypes Boutique cited when he published the new name *A. suffruticosus*. All these specimens were collected in mostly dry localities and represented a shrubby form of *A. fruticulosus* with numerous small leaflets. There are, however, no characters to be found in these specimens, which singly or together do not gradually change into characters commonly seen in South- and East-African specimens of *A. fruticulosus*. (Some intermediate specimens are: Acocks 12352, Hornby 2825, Junod 75, Leendertz 795, Medley Wood 13008, Stolz 765). I therefore decided, that *A. suffruticosus* could not be separated from *A. fruticulosus* as a distinct taxon.

Hildebrandt 2797, the type of *Hoepfneria africana* Vatke now preserved at Kew, is a form of *A. fruticulosus*, formerly named *A. schimperi* Hochst. ex Baker.

4. *A. precatorius* L. — Fig. 5.

Linnaeus, Syst. 2: 472. 1767; DC., Prod. 2: 381. 1825; Desvaux, Ann. Sc. Nat. 11: 418. 1826; Wight & Walker-Arnott, Prod. 1: 236. 1834; Miquel, Fl. Ind. Bat. 1: 159. 1855; Bentham in Martius, Fl. Bras. 15(1): 215. 1859; Grisebach, Fl. Br. W. Ind. Isl.: 190. 1859; Harvey in Harvey & Sonder, Fl. Cap. 2: 262. 1862; Bentham, Fl. Austr. 2: 270. 1864; Baker in Oliver, Fl. Trop. Afr. 2: 175. 1871; in Hooker, Fl. Br. Ind. 2: 175. 1876; Blanco; Fl. Fil. 2: 361. 1879; Taubert in E. & P., Pflanzenfam. 3(3): 355. 1894; Engler, Pflanzenw. Ost Afr. C: 219. 1895; Koorders, Exk. Fl. Java 2: 397. 1912; Gagnepain in Lecomte, Fl. Gen. Indo-Chine 2: 357. 1916; Ridley,

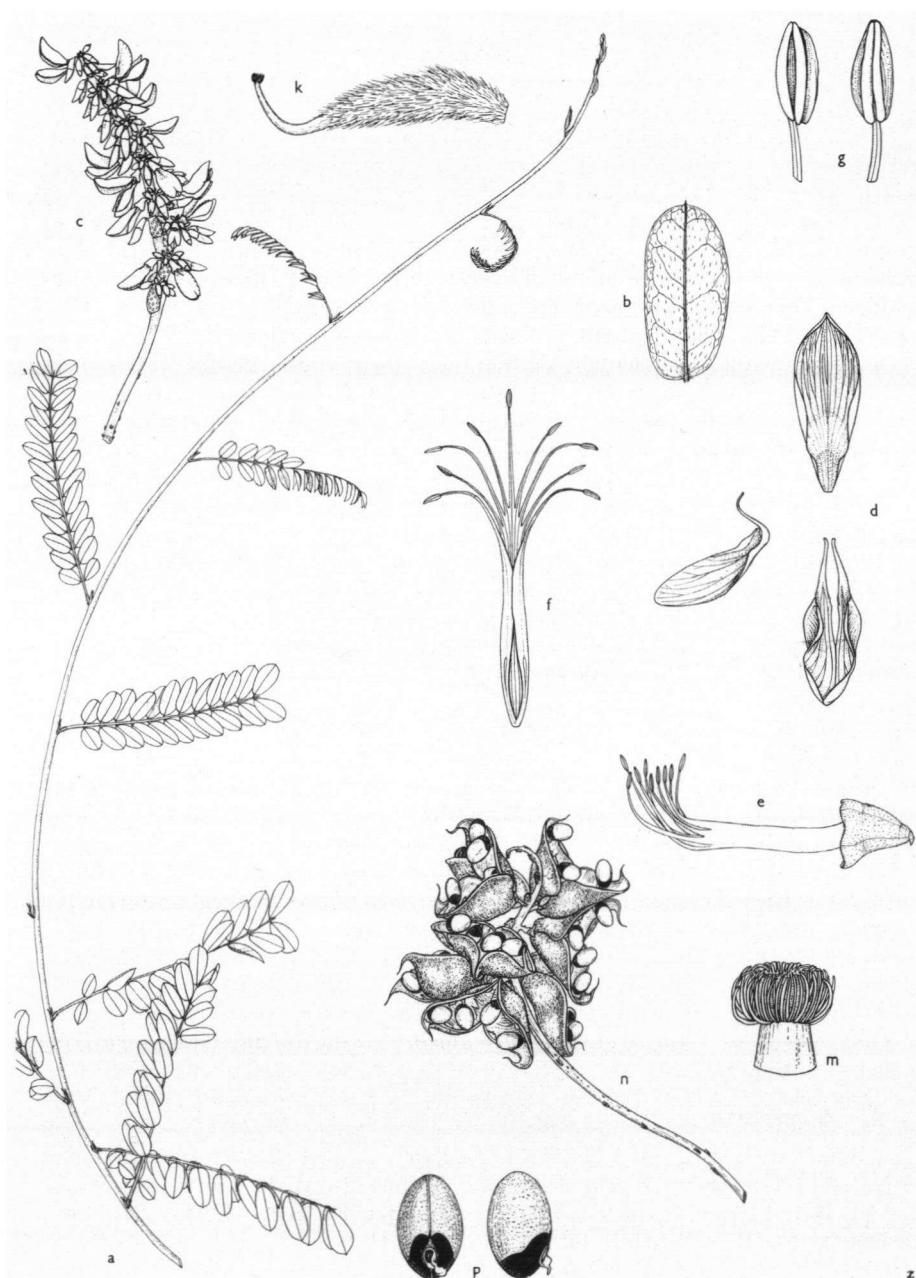


Fig. 5. *A. precatorius* L. a: young branch ($\times \frac{1}{2}$); b: lower surface of leaflet ($\times 2$); c: inflorescence ($\times \frac{1}{2}$); d: parts of the corolla ($\times 2$); e: flower with removed corolla ($\times 3$); f: stamens ($\times 3$); g: anther ($\times 15$); k: ovary ($\times 10$); m: stigma ($\times 50$); n: bunch of pods ($\times \frac{1}{2}$); p: seed ($\times 2$).

Fl. Mal. Pen. 1: 558. 1922; Merrill, Enum. Phil. Flow. Pl. 2(5): 303. 1923; Fl. W. Trop. Afr. 1(2): 412. 1928; Baker f., Legum. Trop. Afr. 2: 351. 1929; Robijns, Fl. Spermat. Parc Nat. Albert 1: 338. 1948; Pellegrin, Legum. Gabon: 211. 1948; Tisserant, Cat. Fl. Oubangui-Chari: 91. 1950; Andrews, Flow. Pl. Sudan 2: 169. 1952; Schnell, Ic. Pl. Afr. 1: 9. 1953; Berhaut, Fl. Sénégal: 31. 1954; Boutique in Fl. Congo Belge 6: 85. 1954; Fl. W. Trop. Afr. 1(2): 574. 1958. — *A. precatorius* L. var. *novo-guineensis* Zipp. ex Miquel, l. c.: 159. — *A. maculatus* Noronha, Verh. Bat. Gen. 5(4): 69. 1790: nomen nudum. — *A. minor* Desvaux, l. c.: 418. — *A. pauciflorus* Desvaux, l. c.: 418. — *A. squamulosus* Meyer, Comm. 1(1): 126. 1836. — *A. abrus* (L.) Wright, Contrib. U.S. Nat. Herb. 9: 171. 1905. — *A. tun-gensis* Lima, Broteria, Ser. Bot. 19: 127. 1921. — *A. wittei* Baker f., Rev. Zool. & Bot. Afr. 21: 303. 1932. — *A. cyaneus* Viguiier, Not. Syst. 14: 172. 1952 (p.p.; see also under *A. fruticulosus*). — *Glycine abrus* Linnaeus, Sp. Pl.: 753. 1753.

Winding climber, with glabrescent mostly green-yellowish young branches. Leaves 8—17-jugate, petiole 5—18 mm long; leaflets ovate, obovate, or oblong, 6—25 mm long, 3—9 mm wide, base rounded or subcordate, top obtuse or acuminate, upper surface glabrous or glabrescent, lower surface sparsely appressed-pubescent.

Inflorescence rigid, thick, strongly falcate; bracts and bracteoles 0.5—1 mm long. Flowers crowded, subsessile. Calyx \pm 3 mm long, pubescent. Corolla 3—5 times as long as the calyx, pale purple to yellowish.

Pods \pm rectangular, bulgy, 2—3.5(5) cm long, 1—1.5 cm wide, mostly densely warty, tomentose, 3—7-seeded; beak reflexed, hook-shaped. Seeds ovoid, 5—7 mm long, 4—5 mm broad, scarlet, with a black spot around the hilum, glossy.

Type: Ceylon, Herbarium Hermann, Flora Zeylanica 284 (BM). This specimen was kindly verified by Mr. A. W. Exell, who affirmed its identity as *A. precatorius* L..

Distribution: Circumtropical.

Ecology: Orchard savannah, shrub savannah, gallery forest, also in plantations or cultivated grounds.

Notes: Zippelius 89, the holotype of *A. precatorius* L. var. *novo-guineensis* Zipp. ex Miquel, collected in New Guinea and preserved in the Leiden Herbarium, has leaflets with a retuse or subemarginate top and long inflorescences. Accordingly, Miquel's description runs: "foliola retuso-subemarginata, mucronulata, racemi folio longiores". These characters, however, are not sufficient to accept it as a distinct variety.

In the Genève Herbarium Dr. de Wit found an *Abrus* specimen labeled: "*Abrus minor* Desv. Ann. Sc. Nat. p. 418 in Afric. Senegambie". A convolute on this sheet carried the note "*Abrus minor* fructus et semen", written in the same hand as on the label. The convolute is made of an old envelope, bearing the postmark "Angers 7 May" and the address "Monsieur Desvaux Nantes". The convolute contained a pod and a few seeds of *A. precatorius*. This specimen I designate as the type of *A. minor* Desv..

Desvaux's description of *A. pauciflorus* is confusing; and I have not found any type-material. The description of the seeds "seminibus sphaericis" and his note "Cette dernière espèce est double dans toutes ses pro-

portions de la précédente (= *A. precatorius*) et la tache noire de ses graines rouges est en croissant", fit *A. precatorius*, but his description of the pod "leguminibus (subbipollicaribus) compressis 8—11 locularis" perhaps may refer to *A. fruticosus* Wall. ex W. & A.. Fortunately, Desvaux gave two references: "Rumph., Amb., 5, t. 32" which is undoubtedly a picture of *A. precatorius*, and: "Pluk., t. 414, f. 6". This last figure, however, is not a picture of a leguminous plant. The second reference presumably should be t. 214, f. 6, which is a drawing of a bunch of pods of *A. precatorius*.

I have not seen the type of *A. squamulosus* Meyer, a plant collected by Drège at Port Natal. Meyer's description of *A. squamulosus* fits *A. precatorius*. According to Meyer the difference from *A. precatorius* is restricted to the surface of the pod, which is "tenuissime squamuloso-tuberculatis" in the plant collected by Drège. This character, however, is so variable that it is not useful for specific segregation.

Lima 94 and 134, type specimens of *A. tungensis* Lima, collected in Mozambique and preserved in the Porto Herbarium, do not show any character which might be seen as a difference from *A. precatorius*.

The holotype of *A. wittei* Bak. f., de Witte 222a (BR), has rigid branches and inflorescences. This perhaps indicates some difference from the forms commonly found in *A. precatorius*, but it is not sufficient to segregate *A. wittei*. In my opinion, these rigidity of the branches and inflorescences of de Witte's specimen is quite accidental.

One of the type-sheets of *A. cyaneus* Viguier carries a detached bunch of pods of *A. precatorius*. This explains why Viguier described the pods and the seeds of *A. cyaneus* as follows: "Legumen breve 20 mm long., 10—12 mm lat., crassum, utrinque abrupte truncatum, villosum. Semina 2—4, ovoides, haud compressa, 4—5 mm long., corallino-rubra, macula nigra ornata, carunculata".

The seeds of *A. precatorius* sometimes appear to be entirely black or white. This is not correlated with any morphological character and seems to be accidental.

Excluded species

Abrus arboreus Velloso, Fl. Flum.: 303; 7: t. 99 and *Abrus lusorius* Velloso l.c.: 302; 7: t. 97 have impari-pinnate leaves and flowers with ten stamens. According to Bentham (Fl. Bras. 15 (1). 1859), *A. arboreus* is conspecific with *Ormosia nitida* Vog. (l.c.: 315, 325) and *A. lusorius* is conspecific with *Rhynchosia phaseoloides* DC. (l.c.: 325).

Specimens examined

Specimens marked by * were examined by Dr. H. C. D. de Wit.

A. canescens Welw. ex Baker

Adams 4394: Ghana, Burufo (K); Bagshawe 731: Uganda, Entebbe (BM); Baldwin jr. 9405: Liberia, Gbau (K); Baldwin jr. 9773: Guinea, Macenta (K); Baldwin jr. 13869: Cameroun, N'Kongsamba (K); Barter s.n.: Nigeria, Jeba (K; W*); Bequaert 3950: B. Congo, Kengele (Beni) (BR); Bequaert 7166: B. Congo,

Leopoldville (BR); Bredo 2712: B. Congo, Kanismur (†) (BR); Brown 324: Uganda, Entebbe (K); Callens 1552: B. Congo, Fumu Dimi (BR); Casteels 26: B. Congo, betw. Gandola and Sali (BR); Chandler 1599: Uganda, Kamanda near Kampala (BR; K); Claessens 1709: B. Congo, Dendu (BR); Daniel 101: Liberia, Suacoco (BM; BR); Daramola & Adebuseyi 38433: Nigeria, Bonu (WAG); De Graer 92: B. Congo, Doruma (BR); Deighton 2442: Sierra Leone, Njala (K); Deighton 4493: Sierra Leone, Musalia (K); Deru 448: Uganda, Kikube (†) (BR); De Schleppe 77: B. Congo, Kurukwata (BR); De Wilde 658: Ivory Coast, S.W. Oroumba-Boka (WAG); De Wilde 760: Ivory Coast, N. of Gr. Lahou (WAG); De Wit & Morton A 2887: Togo, Amedzofe (WAG); Donis 1770: B. Congo, Lemba (BR); Espirito Santo 1065: Port. Guinea, Bissau, Pussubé (COI; LISC); Espirito Santo 3116: Port. Guinea, betw. Bafata and Geba (COI; LISC); Espirito Santo s.n.: Port. Guinea, s.l. (LISC); Germain 2387: B. Congo, Gimbi (BR); Germain 7512: B. Congo, Lukavukavu (PRE); Gillardin 195: B. Congo, Lupatapata (Sunepi) (BR); Gossweiler 5842: Angola, Cazengo, Camundai (BM); Gossweiler 5842: Angola, Chilungo (K); Gossweiler s.n.: Angola, Cazengo, Camondai (LISC); (These last three sheets are most probably similar. The LISC specimen bears a label in Gossweiler's handwriting. The BM specimen is labeled in English, and the Kew specimen bears a printed label with the written number 5842).

Jones 2159 (FHI 4568): Nigeria, Udi (BM); Lebrun 4104: Uganda, Kasenyi (BR); Lebrun 6541: B. Congo, Bumbuli (PRE; U); Leonard 1781: B. Congo, Isangi (BR); Leontovitch 91: B. Congo, Gamena (BR); Le Testu 3145: Oubangui-Chari, Yalinga (BR); Meikle 1089: Nigeria, betw. Kontagora and Ibeto (BR; K); Michell 2822: B. Congo, Nyabitare (BR); Morton G.C. 9385: Togo, Amedzofe (K); Morton G.C. 9992: Ghana, Gonja (K); Morvan 1780: Guinea, Kindia (L); Mullenders 1894: B. Congo, betw. Kaniama and Haut Lomami (BR); Peter 38305: B. Congo, betw. Lübinga and Mivai (†) (K); Punch 32: Nigeria, Lagos (K); Purseglove P. 2422: Uganda, Kambuga, Kigezi (K); Quarré 2416: B. Congo, Mutuy (BR); Risopoulos 158: B. Congo, Porte Gandajika (BR); Robertson 82: Togo, Kpandu (BM); Ruxton 54: Gambia, Kuntaur (K); Schmitz 5263: B. Congo, Kinda (BR); Seret 162: B. Congo, Bina (BR); Small 371: Sierra Leone, Warantambe (K); Tessmann 2697: Cameroun, Komjola (†) (K); Thomas 2704: Sierra Leone, Jigaya (K); Thomas 3233: Sierra Leone, s.l. (K); Van de Brande 605: B. Congo, La Kulu (BR); Vanderijst 706: B. Congo, Muyela (BR); Vanderijst 3533: B. Congo, Kitebe (BR); Vanderijst 11159: B. Congo, Kamtsha (BR); Vanderijst s.n.: B. Congo, Kinkonka (BR); Van Tilborg s.n.: French Congo, Boko (BR); Welwitsch 2250: Angola, Pungo Andongo (BM) (Holotype); Whyte s.n.: Kenya, Mumias (K); Wiuttund (†) 295: Uganda, Entebbe (K).

A. fruticosus Wall. ex W. & A.

Africa (including Madagascar)

Acocks 12352: Transvaal, Jacksontuin (PRE); Acocks 13366: Cape of Good Hope, Bizana (PRE); Adams 4222: Ghana, Gambaga (K); Angus 1574: N. Rhodesia, N. Kafue (PRE); Bagshawe 652: Uganda, Island of Burrema (BM); Baldwin 9775: Guinea, Macenta (K); Baldwin 10319: Liberia, W. Province, Tawata (K); Bally 8295: Tanganyika, Kissengi (K); Barbosa 180: Mozambique, betw. Marracuene and Bobole (COI; LISC); Barbosa 1339: Mozambique, Chimoio (LISC); Barbosa 1661: Mozambique, Durundi (BM; K; LISC); Barnard 268: Transvaal, Lijdenburg (PRE); Barter 1749: Nigeria, Nupe (K); Bates 604: Cameroun, Ebolowa (BM; Z*); Bates 932: Cameroun, Yaoundé (BM); Baum 786: S.W. Africa, Onschingue (Kuito) (BM); Benedetto 124: Ethiopia, Dembidollo (FI); Berhaut 842: Sénégal, Mbao (†) (BR); Berhaut 1433: Sénégal, Gorom (P*) (type *A. stictosperma* Berh.); Berhaut 5600: Sénégal, Sangalkam (K); Bork (†) 474: Mozambique, Lourenço Marques (PRE); Burtt 1431: Tanganyika, betw. Dodoma and Kondoa (K; PRE); Burtt 2447: Tanganyika, Shinyanga Distr. (K); Burtt 5115: Tanganyika, Shinyanga Distr. (BR); Burtt-Davy 2613: S.W. Africa, Waterberg (PRE); Cabra-Michel 2: B. Congo, N. Manyanga (BR); Callens 2731: B. Congo, Pansi (BM); Callens 3122: B. Congo, Tumbi (BM); Chancellor 254: Uganda, W. Nile Distr. (BR; K); Chandler 1223: Uganda, Entebbe (BR; K); Chase 4182: S. Rhodesia, Commonage (Umtali) (BR; K; PRE); Chase 5178: S. Rhodesia, Commonage (Umtali) (K; PRE); Chevalier 3397: F. Sudan, Tabacco (BR; G*); Chevalier 10386: Tchad, betw. ft. Archambault and ft. Crampel (L; G*); Chioevenda 3204: Ethiopia, Amhara (FI); Chioevenda 3249: Ethiopia, Tigre (FI); Codd & de

Winter 4899: Transvaal, Kruger National Park, Nelspruit (PRE); Corbisier 595: B. Congo, Katanga (BR); Cruse 512: N. Rhodesia, Mufulira (BR; K); Dalziel 14: Nigeria, Lokoja (K); Davies 406: S. Rhodesia, Shangani (PRE); Davies 2031: S. Rhodesia, betw. Kariyangwe and Lusula (K); Davies s.n.: S. Rhodesia, Nbaza (†) Dam (K); Decary 1558: Madagascar, baie Radama (P*) (syntype *A. madagascariensis* Vig. var. *typicus*); Decary 1781: Madagascar, Ankaizina (P*) (syntype *A. sambiranensis* Vig.); Decary 2034: Madagascar, Maromandia (Bejofo) (P*) (syntype *A. sambiranensis* Vig.); Decary 6335: Madagascar, Ambilo (P*) (syntype *A. madagascariensis* Vig. var. *littoralis* Vig.); De Giorgi 366: B. Congo, Tshinsangwe (BR); De Giorgi s.n.: B. Congo, Elisabethville (BR) (holotype *A. suffruticosus* Bout.); De Graer 745: B. Congo, Doruma (BR); Deighton 392: Sierra Leone, Kenema (BM); Deighton 1499: Sierra Leone, Njala (K); Deighton 5615: Sierra Leone, Sugar Loaf Mt. (K); Devred 720: B. Congo, Mvuazi (BR); De Witte 100: B. Congo, Kando (BR); Donis 1774: B. Congo, Luki (BR); Drummond 5570: S. Rhodesia, S.W. Mateke Hills (PRE); Dümmer 1099: Uganda, s.l. (BM); Dümmer 5036: Kenya, Kibwezi (K); Dupuis s.n.: B. Congo, Bingila (BR); Eggeling 6086: Tanganyika, betw. Itigi and Chunya (K); Espirito Santo 676: Port. Guinea, Cachine (COI); Espirito Santo 927: Port. Guinea, Bissau, Pussube (COI; LISC); Espirito Santo 1583: Port. Guinea, bet. Bissau and Peluba (COI; K; LISC); Espirito Santo 3406: Port. Guinea, Ritche, Cambore (COI; LISC); Espirito Santo 3546: Port. Guinea, betw. Nova Lamego and Canjufa (COI; LISC); Espirito Santo 3596: Port. Guinea, betw. Sonaco and Bafata (COI; LISC); Espirito Santo 3647: Port. Guinea, Farim (COI); Espirito Santo s.n.: Port. Guinea, Bor (COI); Evrard 1832: B. Congo, Popolo (BR); Exell, Mendonça & Wild 1396: N. Rhodesia, Mufulira (BM); Eyles (†) 5079: S. Rhodesia, Gatooma (K); Fanshawe 1015: N. Rhodesia, Ndola (BR; K); Fanshawe 2219: N. Rhodesia, Kitwe (BR; K); Flanagan 1064: Cape of Good Hope, Kei Mouth (PRE); Frahm-Leliveld 61: Ivory Coast, Adiopodoumé (WAG); Galpin 781: Transvaal, Barberton (PRE); Gathy 431: B. Congo, N.W. Elisabethville (K; PRE); Gathy 591: B. Congo, N.W. Elisabethville (K); Gathy 1186: B. Congo, N.W. Elisabethville (PRE); Germain 2212: B. Congo, Kwango (BR); Gillet 1094: B. Congo, Kisantu (BR); Gillet 2113: B. Congo, Kimuenza (BR); Gossweiler 2830: Angola, Menongue (BM; LISC); Gossweiler 5870: Angola, N'Dalatanda (BM; BR); Gossweiler s.n.: Angola, Kacunda (†) (BR); Greenway 7398: Tanganyika, Shinyanga Hill (K; PRE); Hazel 633: Uganda, Ierego (BR; K); Hepburn 89: Nigeria, Mada Hills (K); Hildebrandt 2797: Kenya, Kitui (K) (type *Hoepfneria africana* Vatke); Holst 2825: Tanganyika, Tanga (K; M*); Homblé 247: B. Congo, Elisabethville (BR); Homblé 1302: B. Congo, Vallée Kapiri (BR); Hornby 2825: Swaziland, Lebombo Mts. (PRE); Humbert 6810: Madagascar, Mandrare (P*) (syntype *A. aureus* Vig.); Huntley 760: Natal, Port Edward (PRE); Jordan 381: Sierra Leone, Rokupr (K); Junod 75: Transvaal, Marovuni (PRE); Junod 196: Mozambique, Delagoa Bay (BR; G*); Junod 4347: Transvaal, Zoutpansberg (PRE); Kassner 668: Kenya, Kin (†) (K); Kassner 2596: B. Congo, Kundelungu Mt. (BM); King 25 B: Sierra Leone, s.l. (K); Koritschöner 1756: Tanganyika, Samuye (†) (K); Laurent, E. & M. s.n.: B. Congo, Imese (BR); Laurent, E. & M. s.n.: B. Congo, Irebu (BR); Leendertz 795: Transvaal, Rooiplaat (L); Leeuwenberg 2137: Ivory Coast, Tiassalé (WAG); Le Testu 3988: Oubangui-Chari, Yalinga (K; P*); Liebenberg 255: Uganda, Kitgum (PRE); Liebenberg 2408: Transvaal, Barberton (PRE); Lima 257: Mozambique, Palma (PO) (holotype *A. gracilis* Lima); Losty & Goddijn 1108: Transvaal, Hartbeestpoort (L); Louis 2046: B. Congo, Kala (FI); Louis 7190: B. Congo, Yangambi (BR); Louis 12861: B. Congo, Yangambi, Ile Tofende (BM; K); Lovemore 526: S. Rhodesia, Sebungwe, Chicomba R. (PRE); Martin 164: N. Rhodesia, Baikiaea for. reg., Kalahari sand (BM); Medley Wood 7920: Natal, Groenberg (PRE); Medley Wood 13008: Natal, Inchanga (L); Michel 3287: B. Congo, Kihinga (BR); Mogg s.n.: Transvaal, Rustenburg (PRE); Morton 6052: Ghana, Volta R. (K); Nalde 131: Angola, Quela (BM); Napier 976: Kenya, Voi Distr. (K); Nornby 3146: S. Rhodesia, Serui Drift (PRE); Onochie & de Wit 679: Nigeria, Gambari F. Res. (WAG); Pappi 7219: Ethiopia, Bogos, Cheren (FI; Z*); Pedro & Pedrogad 937: Mozambique, betw. Boane and Goba (PRE); Pegler 669: Cape of Good Hope, Kentani (PRE); Pentz 220: Natal, Blauwkrans R. (PRE); Perrier 529 bis: Madagascar, Ambongo (P*) (syntype *A. madagascariensis* Vig. var. *typicus*); Perrier 1038: Madagascar, Belambo (P*) (type *A. cyaneus* Vig.); Perrier 4135: Madagascar, Sambirano (P*) (syntype *A. sambiranensis* Vig.); Perrier 4143: Madagascar, Tsaratanana (P*) (syntype *A. grandiflorus* Vig.); Perrier 4152: Madagascar, Loky (P*) (syntype *A. madagascariensis* Vig. var. *dunensis* Vig.); Perrier 12357: Madagascar,

Analamazaotra (P*) (syntype *A. aureus* Vig.); Perrier 12376: Madagascar, Mania-Ivato (P*) (type *A. madagascariensis* Vig. var. *parvifolius* Vig.; Perrier 12387: Madagascar, Ambatoforigina (P*) (syntype *A. aureus* Vig.); Perrier 15552: Madagascar, Tsaratanana (P*) (syntype *A. grandiflorus* Vig.); Perrier 15785: Madagascar, Majunga (P*) (syntype *A. madagascariensis* Vig. var. *dunensis* Vig.; Perrier 15997: Madagascar, Ambilo (P*) (syntype *A. madagascariensis* Vig. var. *littoralis* Vig.); Perrier 16012: Madagascar, Analamazaotra (P*) (syntype *A. aureus* Vig.); Perrier 16765: Madagascar, Betsiboka (P*) (syntype *A. aureus* Vig.); Perrier 16933: Madagascar, Marolambo (P*) (syntype *A. aureus* Vig.); Perrottet 212: Sénégal, s. l. (BM); Peter K 81: Tanganyika, near Kissangara (N. Pare) (K); Peter 34771: Tanganyika, Malongwe-Triva (K); Peter 35245: Tanganyika, Tabora (K); Peter 36916: Tanganyika, betw. Ujiji and Kigoma (K); Pierce 18: Swaziland s.l. (PRE); Pollen & Verdam s.n.: Madagascar, s.l. (L); Prittwitz 136: Tanganyika, s.l. (U); Punch 47: Nigeria, Lagos (K); Pynaert 40: B. Congo, Bumba (BR); Quarré 1044: B. Congo, Ferme Prince Leopold (BR); Quarré 1131: B. Congo, Munama (BR; PRE); Quarré 1150: B. Congo, Munama (BR); Rech 1: Transvaal, Letaba (PRE); Repton 1518: Pretoria, Wonderboom Res. (PRE); Richards 4642: N. Rhodesia, Nimkola (K); Richards 7930: Tanganyika, betw. Igawa and Mbeya (K); Ringoet 11: B. Congo, Tshinsenda (BR); Robijns 1506: B. Congo, Bukama (BR); Robijns 1563: B. Congo, Munama (BR); Robijns 1883: B. Congo, Kasenga (BR); Rogers 26290: B. Congo, Elisabethville (K); Rousseau s.n.: Ethiopia, Mt. Smith (L); Rudatis 1833: Natal, Dumisa (L; PRE; W*; Z*); Scheffler 138: Kenya, Kibwezi (K; P*; W*); Schimper 1552: Ethiopia, Djeladjeranne (BR; FI; G*; K; L; M*; P*; W*) (type *A. schimperii* Hochst. ex Bak.); Schimper 165 (123): Ethiopia, Djeladjeranne (FI); Schlechter 4524: Transvaal, Elim (BM; G*; Z*); Schlieben 6160: Tanganyika, Lindi (BM; BR; G*; M*; Z*); Schmitz 2781: B. Congo, Etoile (BR); Schweinfurth 2137: Sudan, Lande der Bongo (K; M*; W*); Schweinfurth 2166: Sudan, Lande der Bongo (FI; P*); Schweinfurth 2345: Sudan, Seriba Ghattas (K); Smith 6845: Transvaal, Magaliesberg (PRE); Stolz 465: Nyasaland, Kyimbila (K); Stolz 765: Nyasaland, Kyimbila (L; M*; U; W*; WAG); Tanner 1361: Tanganyika, Mwanza (K); Tessmann 576: Spanish Guinea, Behui (†) (K); Thielen 22123: B. Congo, Bas Katanga (BR); Thode A 414: Transvaal, Pretoria (PRE); Thomas 3767: Sierra Leone, Bumbuna (BM); Thomas 4466: Sierra Leone, Manaka (BR); Tisserant 738: Oubangui, les Moroubas (P*) (syntype *A. repens* Tiss.); Tisserant 2946: Oubangui, Bozoum (P*) (syntype *A. repens* Tiss.); Ujor 29395: Nigeria, Gambari F. Res. (K); Van de Schijff 2594: Transvaal, Kruger National Park (PRE); Van Meel 5322: B. Congo, Kanonga (BR); Van Meel 5382: B. Congo, Kanonga (BR); Van Someren 168: Kenya, Garabani Hill (K); Vaughan 2377: Tanganyika, Pugu Hills (BM); Verdict 474: B. Congo, Lukafu (BR); Verheyen 3451: B. Congo, Mweleshi (BR); White 2105: N. Rhodesia, Mankoya, Luampa Mission (BR; K); White 2539: Nyasaland, Rumpi, Njakwa (BR; K).

America

Focke 881: Dutch Guyana, Onoribo (U); Kuhlmann 3230: Brazil, Rio Branco (U); Spruce 786: Brazil, Santarem (K; G*) (type *A. tenuiflorus* Spruce ex Benth.); Ule 6038: Brazil, Rio Negro (L).

Asia

Andamans s.n.: India, Hobdaypur (L); Backer 7864: Java, Djatirato (L); Backer s.n.: Java, Batavia (L) (type *A. pulchellus* Wall. ex Thw.f. *melanosperma* Backer); Basker s.n.: Java, Batavia, Depok (WAG); Bakhuizen van den Brink jr. 1041: Java, Tjiboerl (L; U); Bakhuizen van den Brink jr. 1487: Java, Tjikidang (L); Blume 831: Java, s.l. (L) (type *A. acutifolius* Blume ex Miq.); Bünnemeyer 11088: Celebes, Lombasang (L); Bünnemeyer 11225: Celebes, Lombasang (L); Bünnemeyer 11294: Celebes, Lombasang (L); Carr 12363: New Guinea, Rouna Falls (BM); Carr 12364: New Guinea, Rouna Falls (BM); Fenix s.n.: Philippines, Bauang (BM; L); Gibbs 8: China, Hongkong, Tai Po (K); Hallier 4345: Philippines, Luzon (L); Helfer 85: India, Calcutta (BR; L); Hosseus 155: Siam, Kan-Phra-Dang (BM); Lei 44: China, Pak Shik Ling (K); Levine 1849: China, Canton (K); Merrill 3265: Philippines, Mt. Mariveles (L; G*); Monod de Froideville 72: Celebes, Moena (L); Raap 528: Java, Bantardjati (L); Sampson 1553: China, Canton (K); Sampson s.n.: China, Canton (K); Sampson & Hance f. s.n. (Herb. Hance 15806): China, Shek-mun

(Canton) (K; W*) (type *A. mollis* Hance); Schiffner 2104: Java, Mt. Salak (L); Schweinfurth (comm. Barbey) 528: Yemen, Gebel Mehegjaria (K); Schweinfurth (comm. Barbey) 1843: Yemen, Agara (BR; K); Strachey & Winterbottom 2: India, Kota (BR); Thesinger s.n.: Arabia, Asir, Harub (BM); Thomson s.n.: India, Maisor & Carnatic (L; W*); Thwaites 1467: Ceylon, Belanger (G*; P*) (type *A. pulchellus* Wall. ex Thw.); Tsang 21739: China, Tung Koo Shan (K); Tsiang Ying 963: China, Kwangtung, Kochow (K); Vesey-Fitzgerald 16290/10: Arabia, Jabal Faifa (BM); Wight 731: India, s.l. (L; W*); Wight 827: India, s.l. (lectotype (BR) & isotype (G*) *A. fructiculosus* Wall. ex W. & A.); Zollinger 506: Java, s.l. (BM); Zollinger 2758: Java, s.l. (BM; G*).

A. precatorius L. (African specimens only)

Baldrati 4280: Ethiopia, s.l. (FI); Baldrati 4350: Ethiopia, s.l. (FI); Baldrati 4361: Ethiopia, s.l. (FI); Baldrati 4363: Ethiopia, s.l. (FI); Barbosa 1216: Mozambique, Manica (LISC); Barbosa 1936: Mozambique, Montepuez (LISC); Barbosa 2618: Mozambique, betw. Memba and Cavá (LISC); Beccari 183: Ethiopia, Keren (FI); Bequaert 726: B. Congo, Malela (BR); Berhaut 568: Sénégal, Cambérène (BR); Chandler 1456: Uganda, Kajansi Forest, Entebbe Rd. (BR); Chevalier 45093: Cape Verde Islands, Fogo (COI); Crocokewit 608: B. Congo, Usumbara (WAG); De Carvalho s.n.: Mozambique, Mussoville (COI); De Graer 945: B. Congo, Doruma (BR); Devred 3254: B. Congo, Luki (BR); Dewevre 585: B. Congo, Coquilhatville (BR); De Wilde 494: Ivory Coast, Bingerville (WAG); De Wilde 808: Ivory Coast, betw. Abidjan and Gr. Bassam (WAG); De Witte 222a: B. Congo, Kiambi (BR) (holotype *A. wittei* Bak. f.); Espirito Santo 1485: Port. Guinea, betw. Bissau and Antula (COI; LISC); Espirito Santo 3705: Port. Guinea, bet. Susana and Catão (COI; LISC); Evrard 317: B. Congo, Bodangabo (BR); Exell & Mendonça 2415: Angola, Pôsto da Tampa (LISC); Faulkner 236: Mozambique, betw. Lugela and Moenba (BR); Flamigni 10400: B. Congo, Pandji (BR); Garcia 746: Mozambique, Chimoio (LISC); Germain 5832: B. Congo, Plaine Ruzizi (BR); Hagerup 766: Nigeria, Jebba (BR); Jackson 1383: Nyasaland, Nankumba (BR); Junod 163: Mozambique, Delagoa Bay (BR; Z*); Lanjouw 968: Transvaal, Barberton (U); Laurent 1135: B. Congo, Eala (BR); Laurent, E. & M. s.n.: B. Congo, Bumba (BR); Lebrun 4102: Uganda, Kasenyi (BR); Lima 94: Mozambique, Palma (PO) (syntype *A. tungensis* Lima); Lima 134: Mozambique, Palma (PO) (syntype *A. tungensis* Lima); Louis 9534: B. Congo, Isl. "Esali" (Yangambi) (BR); Mendonça 3374: Mozambique, betw. Inharrime and Chidenguel (LISC); Michel & Reed 809: B. Congo, Gisuru (BR); Mullenders 1644: B. Congo, betw. Kaniama and Haut Lomami (BR); Paoli 655: Somalia, El Magu (FI); Pappi 4491: Ethiopia, Harara near Ghinda (FI); Pappi 5443: Ethiopia, Lungo (FI); Pedro & Pedrogad 1260: Mozambique, betw. Guija and Canicado (COI); Peter 69 (?): Tanganyika, Kilimandscharo (BR); Peter 229: Tanganyika, betw. Mapinga and Kondutschi (BR); Robijns 147: B. Congo, Kisantu (BR); Schlieben 2685: Tanganyika, Mafia Isl. (BR; M*; P*); Schlieben 4019: Tanganyika, Morogoro (BR; Z*); Schlieben 6177: Tanganyika, Lindi (BR; G*; M*; P*; Z*); Schmitz I, 911: B. Congo, Vallée Lofoi (BR); Schweinfurth & Riva 2162 (950): Ethiopia, Ghinda (FI); Thomas 5203: Sierra Leone, Zoni Kana (BR); Torre 2508: Mozambique, Majacaze (LISC); Torre 3607: Mozambique, Zambezia, betw. Mocuba and Nicuadala (LISC); Vatova 1381: Somalia, Margherita (FI); Wallace 711: Tanganyika, Mafia Isl. (BR); Warnecke 202: Togo, near Lome (BR; G*; L; M*; P*); Welwitsch 2248: Angola s.l. (LISC).